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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/252,551	02/18/99	SAMUEL I	H 34176/JWE/B6

LMC1/0724

EXAMINER

LEE, C

ART UNIT	PAPER NUMBER
	2739 9

DATE MAILED: 07/24/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 09/252,551	Applicant(s) Henry Samuell, et al
Examiner Andrew Lee	Group Art Unit 2739

Responsive to communication(s) filed on Mar 23, 2000

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle* 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

- Claim(s) 104-170 is/are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
- Claim(s) _____ is/are allowed.
- Claim(s) 104-132, 136-140, and 145-170 is/are rejected.
- Claim(s) 133-135 and 141-144 is/are objected to.
- Claims _____ are subject to restriction or election requirement.

Application Papers

- See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- The drawing(s) filed on _____ is/are objected to by the Examiner.
- The proposed drawing correction, filed on _____ is approved disapproved.
- The specification is objected to by the Examiner.
- The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- All Some* None of the CERTIFIED copies of the priority documents have been
- received.
- received in Application No. (Series Code/Serial Number) _____
- received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- Notice of References Cited, PTO-892
- Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- Interview Summary, PTO-413
- Notice of Draftsperson's Patent Drawing Review, PTO-948
- Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 3/23/2000 have been fully considered but they are not persuasive.

Re Claims 104 and 111, Applicant argues that Rossi '711 fails to teach the method of processing signals having predetermined characteristers at particular phases of the signals. However, Rossi teaches the operations of the control circuit 11 of fig 2, wherein the inputs signals (see col 7, lines 16) are process in a predetermined fashion (see col 8, lines 17 +) to produce an output (1/T) to the A/D converter. Clearly, the output of the Timing CKT 9 , 1/T, inherently have an particular phase and is a function of the predetermined criteria such as the desired phase control signal (See col 7, lines 62-65).

Re Claims 115 and 117, Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

In particular to claims 115 and 117, Rossi teaches the A/D converter outputs discrete time signals (timing signals) having phase and amplitude. The sampling times and zerocrossing time are the actual times, and the baud rate clock signals define the predict times. The baud rate

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clocks are adjusted according to the phase difference between the actual time and the rate clock signals (see col 6, lines 3-22).

Re Claims 107, 110, 112, 114, and 118 stands/falls depending on the outcome of Claims 104, 111, 115, and 117.

Applicant's arguments with respect to claim 126 have been considered but are moot in view of the new ground(s) of rejection.

Re Claim 119 and 127, Applicant argues the Schenk fails to teach the timing signals from a particular value. The input to the A/D from TG is a particular value and the adjustment is made by the INT which also provides a particular value to the A/D.

Re Claims 121-125, 127, 128 and 128, In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Re Claims 130 and 140, Applicant argues that the combination of admitted prior art figs 3 and 4 in view of Schenk '412 fails to teach the A/D converter configured to convert a plurality of analog levels into a corresponding plurality of digital signals. However, one skilled in the art would have recognized that signals transmitted via twisted pairs of wires experience attenuation. Clearly, the attenuation of the twisted pairs of wires will fluctuate depending on the physical condition. Therefore, the plurality of analog levels would depend on levels of attenuation

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encounter by the twisted pairs. Furthermore, in view of Townsend et al '423 teaches the adaptive equalizer which provides the wider reception of input signals.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 147-151, 153 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re Claims 147, 153 recite "the packets of analog signals...". It is unclear how, in view of independent claim 145, the packets are analog. Claim 145 does not recite "packet" nor does it recite A/D conversion producing a "packet".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was

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commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 104-118, 132, 145, 146, 152 , 154-156, 158-161 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossi U.S. Patent No. 5,276,711 in view of the admitted prior art.

As for claims 104-106, 109, 111, 113,115-117, and 132, Rossi shows a receiver for receiving data signals (see fig 1). The A/D converter outputs discrete time signals (timing signals) having phase and amplitude. The sampling times and zerocrossing time are the actual times, and the baud rate clock signals define the predict times. The baud rate clocks are adjusted according to the phase difference between the actual time and the rate clock signals (see col 6, lines 3-22). Rossi does not recite that the data signals are in the form of packets.

It is common practice in the art to transmit data in the form of packets as evidenced by the admitted prior art. As admitted at col. 3-4, in Ethernet networks data is transmitted in the form of Ethernet packets, and each packet has a preamble. To transmit data in the form of packet would have been obvious to one of ordinary skill in the art, and the motivation for doing so would have been to avoid retransmitting a long message if errors occur within a portion of the message.

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As for claims 107, 112, 114 and 118, the symbol detector 106 determines the amplitude of the data.

As for claim 110, adjustment made for first ones of symbols in the preamble of each packet would have been obvious to one skilled in the art since there is no need to make further adjustment if the local baud clock is in synchronism with the received symbols.

7. Claims 119, 120, 126, 127, 157, 167 and 168 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schenk U.S. Patent No. 5,065,412 in view of Townsend et al U.S. Patent No. 5,323,423.

In fig 1, Schenk shows an A/D converter for receiving analog signals from twisted pairs of wires and converting the analog signals to digital signals, the loop filter SF and the phase discriminator PD operate on the digital signals to provide phase control signals (timing recovery signals) indicating changes of the digital signals, and the adjusting unit INT use the phase control signals regulate the sampling frequency of the A/D converter (see col 3, line 25 to col 4, line 33).

As for claim 126, the digital equalization is provided by the equalizer VEZ and NEZ depicted in fig. 1 and the decision element ENT recovers the amplitudes of the digital signal as claimed.

Schenk fails to explicitly teach the digital equilizer to be an adaptive digital equilizer. However, Townsend et al teaches a controlled adaptive equalizer. The motivation for using the adaptive digital equilizer would have been to allow for a wider variation of the input signal amplitude. Therefore, it would have been obvious to one skilled in the art to have incorporate the

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adaptive digital equalizer of Townsend et al into the teaching of Schenk to be susceptive to a wider variety of input signals.

8. Claims 121-125, 128, 129, 162, 164-166 and 169 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schenk U.S. Patent No. 5,065,412 in view of Motley et al U.S. Patent No. 4,597,089.

Schenk does not show providing automatic gain control (AGC) to the analog signals. In the '089 patent, Motley et al disclose an AGC unit 35 connected to a telephone lines for providing an automatic gain control to analog signals to be applied to an A/D converter; see fig 3 and col. 4, lines 6-10. One skilled in the art would have recognized that signals transmitted via twisted pairs of wires experience attenuation. Therefore, to use the AGC unit of Motley et al in combination with the A/D converter of Schenk would have been obvious to one of ordinary skill in the art since Motley et al explicitly suggest that an AGC unit provides the desired signal level.

9. Claims 130, 131, 136, 137, 139, 140, 163 and 170 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Schenk U.S. Patent No. 5,065,412.

As shown in fig 3 and 4, the admitted prior art discloses all that is claimed except an A/D convert and an equalizer at each receiver. As described above, Schenk shows an A/D converter and an equilizer. To use an A/D converter and an equalizer at each receiver of the admitted prior art would have been obvious to one of ordinary skill in the art, and the motivation/suggestion for doing so would have been to eliminate "most of the distortion caused by the electrical properties of the two-wired lines" (Schenk, col. 3, lines 48-50).

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Allowable Subject Matter

10. Claims 133, 134, 135, 141-144 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claims 145-151, 153 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

Prior art fails to teach the combination of claims 130-133, wherein the bidirectional data communication system further comprises of first and second timing loops associated with the high and low gain stages.

Prior art fails to teach the combination of claims 140-141, wherein the bidirectional data communication system further comprises a slicer coupled to received the digital signal from the feed forward equalizer and outputting a signal representing a symbol.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Lee whose telephone number is 703)305-1500. The examiner can normally be reached on Monday-Friday from 8:30 AM - 6:00PM, Eastern Time.

If attempts to reach the examiner by telephone are not successful, the examiner's supervisor, **Mr. Chau Nguyen**, can be reached on 703)308-5340.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC 20231

or faxed to: (703) 308-9051, for formal communications intended for entry or
(703) 308-5403, for informal or draft communications,
please label "**PROPOSED**" or "**DRAFT**".

Hand-delivered responses should be brought to:

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Crystal Park II, 2121 Crystal Drive, Arlington, Virginia Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is 703)305-3900.

Andrew Lee

June 1, 2000



CHAU NGUYEN
PRIMARY EXAMINER